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THE INSTITUTION OF ENGINEERS, AUSTRALIA

SYDNEY DIVISION ENGINEERING HERITAGE COMMITTEE

ORAL HISTORY PROJECT

INTERVIEWEE: JOHN MUIREHEAD

INTERVIEWER: RICHARD RAXWORTHY

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SIDE ONE

Minutes

- 1.5Biographical details.  
Born: 1928, Bournemouth, UK  
Father in Indian army. Mother sent to England for his birth. JM taken to India by age of one.  
Early childhood spent in India.
- 2.0Education. Started school in India. Preparatory school, England, age seven. Evacuation to India 1940. Education in India for 2.5 years - Bangalore in the Deccan, Simla in the North in the Himalayas. Quality of education in India/ Cambridge examinations.
- 3.0Parental influence. Father - regular soldier, sense of justice, loathing of corruption. Mother - sense of public duty, recognition by the Indian government/ medals/ religion/ friendship with Lady Wavell.
- 5.5Childhood. Life as child of an army family. Privileged existence. Attitudes to poverty. Socialising with Indian children/ children of the brother of the Maharaja of Mysore.
- 6.0Mother's family. Family in India for generations. Father in the Royal Engineers, responsible for building of the Khyber Pass Road. Grandfather - judge in the Indian Civil Service.
- 7.0Education in England. School emphasis or) arts and humanities. Poor student at secondary school level.
- 8.5Apprenticeship to Braithwaite and Co. Engineers Ltd. Description of company - steel fabricators with an active civil engineering section. Attendance at technical colleges. Apprenticeship to Braithwaites in Newport, South of Wales and West Bromidge, Midlands, England. Apprenticed as a construction engineer, develop knowledge of fabrication procedures, engineering and drafting procedures and design. Merit of 'sandwich type' system.
- 10.0Sport. Involvement.
- 11.0Apprenticeship. Newport, South Wales - three years. Description of work. Newport – factory buildings, drafting of the steelwork. Steel Tank Division, drafting department. JM's introduction of a new drafting system.
12. 0West Bromidge. Steel fabrication factory which produced big bridge steel in the largest magnitude and complexity. Bridges built by Braithwaites. JM involvement with bridge constructed in Portugal. Dorman Long - private company, located at Middlesbrough.
- 13.5Site Engineer, vegetable oil refinery, Izmir Turkey. Purpose of his visit/ design and supervision of construction of buildings in steel and reinforced contract.
- 14.5Site Engineer, Mombasa, Kenya 1954-1958. Various jobs - deep water berths, design and construction of slipway for tugs, precast concrete yards.
- 16.0Precast concrete yard. Output - 700 pre-stressed concrete girders, 60 ft in span, 4 girders per day. Description of work techniques and processes.
- 18.0Superiors in Turkey and Kenya. Zimotiv Slavinsky, in charge of Istanbul office.
- 19.0Description of work, Izmir. Involvement with parts of the superstructure designed on site. Mike Hurst, designer in London.
- 20.0Superiors in Mombasa. Sigmund Lester. Major influence, abundance of commonsense, ability to enthuse and inspire. Died 1965, Sydney. Experience with prestressed concrete and vacuum concrete in Mombasa.

Lady Wavell, Maharaja of Mysore, Zimotov Slavinsky, Mike Hurst, Sigmund Lester

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| 22.5 | <b>Braithwaites, London office.</b> JM's work in designing falsework (temporary works) for bridges. Devised construction method for bridge in County Cork, South Ireland and Gladesville bridge in Sydney. Tasman bridge, Hobart.  |
| 24.5 | <b>Work colleagues, London.</b>  |
| 25.5 | <b>Tender for Gladesville bridge, Sydney.</b> Sigmund Lester, move to Reid & Mallock as chief engineer. Original tender for Gladesville bridge. Alternative design put forward by Reid & Mallock and Maunsell's -reinforced concrete arch bridge. Negotiations with the Department of Main Roads after display of model. |
| 28.5 | <b>Work on falsework design for first tender of Gladesville bridge.</b> Involvement of JM by Sigmund Lester.   |
| 29.0 | <b>Tasman Bridge.</b> Design, Maunsell's - main consultants, Gifford and Partners - superstructure. Involvement of JM by Sigmund Lester. Consortium: Reid & Mallock, Braithwaites, Stuart Bros of Sydney, Lipscombes of Hobart.  |
| 30.0 | <b>Stuart Bros of Svdney.</b>  |

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**SIDE TWO**

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| 1.5  | <b>Move to Australia.</b> Tasman Bridge. Tender. Braithwaites contribution - heavy foundations. JM – planning engineer.   |
| 3.0  | <b>Description of JM's role on Tasman bridge project.</b> Temporary works designs, scheduling and procurement of the temporary works, technical correspondence.   |
| 3.5  | <b>Contribution to the Tasman bridge project.</b> The means of constructing the foundations. Difficulties. Description of construction of the foundation piles (272 ft long - longest bridge foundation piles in the world at the time). Driving of piles problems. Locating the piles. Invention of template pontoon by JM. Detailed description of template pontoon and process of locating the piles. Problem solving. |
| 9.0  | <b>Captain Cook Bridge.</b> Similarities and differences [no details provided]  |
| 10.5 | <b>Sigmund Lester.</b> Frequent visitor to project. Offer of job via Lester on the construction of the Warringah Expressway.  |
| 11.0 | <b>Marriage.</b> Mombasa, Kenya, 8 December 1956.   |
| 11.5 | <b>Qualifications and Requirements.</b> Qualifications gained at London Polytechnic. Views on requirements to become a member of the Institution of Engineers.  |
| 14.0 | <b>Warringah Expressway.</b> Reasons for Braithwaites to not continue trading in Australia. Offer of job as Construction Manager of the Warringah Expressway in May 1965.   |
| 17.0 | <b>Responsibility on Warringah Expressway job.</b> For the contractor, Reid & Stuart. Director of company, Will Noble. Bill Pugh, resident engineer on site for the Department of main Roads. Design by American firm, De Leuw, Cather & Company.   |
| 19.0 | <b>Land usage for Warringah Expressway.</b> Considerations of waste of land. Difficulties of project with respect to design. Problems during construction - number of crossing streets, underground services that had to be kept operating, organisational challenges.  |
| 21.5 | <b>Dates, Warringah Expressway.</b> Start: May 1965<br>Opened to traffic: June 1968<br>Completion: late 1968  |
| 22.0 | <b>Completion.</b> Feelings upon completing. Relationship with Department of Main Roads. Conditions of Contract. Arbitration clause. Dispute clause in Department of Main Roads contract - arbitrator to be the Commissioner of Main Roads. Resistance by Reid & Stuart. Effect on company. Reflection on JM as project manager - change of career.   |
| 24.5 | <b>Parkhill &amp; Freeman.</b> Approach to JM by Don Freeman. Arrangements with Reid & Stuart re JM's employment.   |
| 25.5 | <b>Consulting area of Engineering.</b> Entry.   |
| 26.5 | <b>Arbitration.</b> Decision to become an arbitrator. First experience in arbitration as an observer in the arbitration that followed the construction of the Gladesville Bridge. Arbitration on Warringah Expressway in front of the Commissioner of Main Roads.   |

- 28.0 **First consulting job.** Design of dry dock in Balmain for Sydney Harbour Ferries. Air operated flap gate. Choice of location for graving dock. Study undertaken for work in Balmain.

## END OF SIDE TWO

### SIDE 3

- 1.0 **Graving Dock at Balmain for Sydney Ferries.** Box gate for graving dock at Balmain Sydney. Designer.
- 2.0 **Practice.** Size of practice and variety of work. Survey undertaken for the Ministry of Transport into possible ferry service Parramatta and Manly-Warringah area. JM's responsibility selection of ferry vessels and landing facilities. The selection of vessels/ types of vessels considered: hydrofoil vessels, catamaran types, hovercraft, skimmer type vessels. Use of waterways in Sydney. Time of travel.
- 7.0 **Environmental interests.** Engineering Heritage Committee/ Basis of interest/ the contribution of civil engineers to the quality of modern life.
- 9.0 **Institution of Engineers, Australia, Sydney Branch.** Civil Branch Committee 1969. Other committee members including chairman, Bruce Sinclair, Jos Wiggins. Meetings, tasks, public lectures. Chairman, Civil Branch Committee. Member of Sydney Division Committee.
- 12.0 **Sydney Division Engineering Heritage Committee.** Formation. Start of Engineering Heritage Movement in South Australia by Derek Gunning [Denis Cumming].
- 13.5 **Oral History Project.** Establishment/ early days.
- 15.5 **Sydney Division Engineering Heritage Committee.** Chairman. Projects/ index of Sydney Morning Herald, computer based register of items of engineering heritage. Conference/ past conferences, eminent speakers. Functions of Engineering. Heritage Committee.
- 19.5 **Projects for Parkhill &Freeman.** Infrastructure for open cut coalmine in Hunter River Valley. Tierney & Muirhead. Setting up of company.
- 21.0 **John Muirhead & Partners Pty Ltd.** Setting up, 1977.  
Important projects/ passenger loading facilities for Manly ferries at Circular Quay and Manly. Description of work. Study undertaken for project. Specifications for the design of the ferries. Comparison with New York Ferry operations.  
Arrangements for stopping ferries that collide with piers. Vessel Arrester System. Detailed description of operation. Model tests of system by CSIRO/ witness by Maritime Service Board. Investigations and considerations of the system -currently ongoing. Current arrangements.

## END SIDE 3

### SIDE 4

- 1.5 **Engineering interests.** General interest in harbour works. Definitions of engineering.
- 3.0 **Other projects undertaken by John Muirhead & Partners.** Design for Liquid Petroleum Gas Installation at Port Botany. Structural design at Australia's Wonderland. Big Dipper at Australia's Wonderland - analysis of design.
- 6.0 **Tasman Bridge accident.** Consideration of vessel arrester system to protect the bridge. Study and proposal presented to Bridge Replacement Committee. Damage done in accident.
- 9.5 **Jetty at Coniston Beach, Port Kembla.** Temporary jetty built for the purpose of the construction of ocean outfall. Commission by contractor (Hornibrook Group). Design requirements. Excellence Award by Institution of Engineers, Australia. Description of project/ wave forces/ design/ performance during storm.
- 13.4 **Manly Marineland.** Construction of underwater shark tank. Development of Manly Wharf area. Basement area. Design of structure to resist wave forces.
- 16.5 **Spit Bridge Marina.** New system used.
- 17.0 **Warkworth Coal Mine, Hunter Valley.** Heavy earth moving machinery consideration with reference to resilience of concrete. Diversion of road - challenge presented by time constraints/ documentation/ approval of drawings by Department of Main Roads.
- 19.5 **Design study for infrastructure for. RAN Frigate construction at Newcastle.** Commission by Vickers (Cockatoo Dock Yard). Description of study. Unsuccessful tender.
- 21.0 **Finger Piers, Walsh Bay.** Timber piers built between 1917 & 1922. Development for hotel and serviced apartments. Method devised for submerged carpark for apartments.

Bruce Sinclair, Jos Wiggins, Denis Cumming

23.0     **Extensions to Pier 1, Walsh Bay.**

23.5     ***Aurora Australis*, Launching facilities built by Carrington's Slipways on the Hunter River.**  
Description of system devised for launching vessel. Actual launch and resulting damage.

28.0     **Mine hunter vessels.** Specific problems in designed launching facilities.

30.0     **Sale of John Muirhead & Partners.**

**END OF INTERVIEW**